THE PENNSYLVANIA STATE DENTAL JOURNAL

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VOL. XIV, NO. 2 NOVEMBER, 1946 WHOLE NUMBER 35

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he Pennsylvania State Dental Journal, published by the Pennsylvania State Dental Society monthly rom October to June inclusive (nine issues). Office of publication, Spruce Street Medical Building, hiladelphia 3, Pa. Subscriptions fifty cents a year, single copies ten cents. Members of the Penn-lvania State Dental Society, twenty-five cents a year (deducted from the annual dues), single opies five cents. Advertising rates on application to the editor. Entered as second class matter anuary 18, 1945, at the post-office at Philadelphia, Pennsylvania, under the Act of August 24, 1912.

Manuscripts and communications pertaining to the Journal should be sent to the editor, Dr. Abraham Cohen, Spruce Street Medical Building, Philadelphia 3, Pennsylvania.

he Pennsylvania State Dental Society, although formally accepting and publishing the reports of e various committees and the essays read before it and its component societies, holds itself holly irresponsible for the opinions, theories or criticisms herein contained, except when other-ise decided by special resolution.

The Scientific Basis for Producing Further Improvements in Cast Inlay and Crown Restorations*

By Earl Allen Nelson, D.D.S.
Minneapolis, Minnesota

A process for casting gold inlays was developed about forty years ago. At that time all castings were made too small. Van Horn, Price and others demonstrated the reasons for this by calling our attention to the shrinkage of wax and of the gold. Consequently, the wax-expanding water bath and thermal-expanding investments were developed. The next question concerned the amount of expansion. That is, how much should the investment mould be expanded to compensate properly for the shrinkage of wax and of the gold alloy? This was answered by developing a number of rules concerning types and size of patterns and temperatures of laboratories and water baths.

By this time dentists everywhere began to believe that the casting technic had been perfected. I was not so optimistic. It so happens that arbitrary rules are good for some castings, but not for all of them. As long as these rules are used, many castings will be too small or too large.

Because such rules are so universally used it may be well to analyze some of their fallacies. Suppose the temperature of the laboratory is 70° F. and we are working with an indirect MOD inlay pattern for an upper second molar. The pattern is made to fit an accurate amalgam model at room temperature as all indirect patterns should be made. In this case there will be no wax shrinkage.

Then suppose we make another pattern for the same cavity but directly in the mouth at a temperature of approximately 95° F., as direct inlay patterns should be made. In the second case we will have the shrinkage of wax, caused by cooling from 95° F. to 70° F., in addition to the shrinkage of the gold. Obviously, if we should subject both of these patterns to the same temperature in a water bath to obtain the expansion, there would be a difference in the size of the resulting castings equal to the wax contraction of the second pattern.

This experiment will prove two facts: namely, that we cannot always use the same amount of expansion for a certain type of pattern; and also, that we cannot divide our patterns into groups and use the same amount of expansion for any particular group.

Another common fallacy that has complicated our process is the idea that a large casting requires a greater percentage of expansion than a small casting. This is true only if our calculations are wrong. We must remember that a flaw in our technic will be multiplied directly in proportion to the size of the casting.

Suppose we should ask the question, "Why do we need expansion in the casting process?" The answer would be simple. It is because we employ as many as five different variable materials and all of them may change in size as they are being used. It is our responsibility to

* *Read before the Pennsylvania State Dental Society, Pittsburgh, Pennsylvania, May 9, 1946.*

know when and in what amount these changes occur and to be able to balance one or more expansions against the shrinkages. As long as our materials are as they are, the necessary amount of mould expansion can be determined only from a knowledge of the dimensional changes which occur in all the materials used in each particular case. Only by this knowledge can we eliminate some of these changes and control the others. Arbitrary rules tend toward a disregard for such considerations. Science allows a tolerance and by the same token science demands that we approach our problems in a logical manner. It is to that end that this paper is being presented.

Compensation for Gold Shrinkage

As we go through the process of making a cast restoration, we transfer from the indirect impression to the amalgam or copper model, to the wax, to the investment material and finally to the gold alloy. The basic problem is to compound an investment material which, when manipulated properly, will compensate accurately for the shrinkage of the alloy only. This can be accomplished by mixing two investment materials of higher and lower expanding qualities. (Phillips) I use cristobalite and a well-known gray investment, the proportion being slightly greater in cristobalite by weight. If, in addition to the gold alloy shrinkage, there are dimensional variations in the wax due to temperature, or due to the indirect impression or model material, then the proportions of the two investments must be altered accordingly.

Gold Shrinkage Plus Wax Shrinkage

The qualities of inlay wax are well known. Many operators have stressed the fact that a wax pattern shrinks as it cools to the laboratory temperature. The amount of this shrinkage may be very little or it may be greater in various amounts and sometimes almost equals the shrinkage of the gold alloy. According to Keys, the "average" amount of wax shrinkage in making inlay patterns is 0.4%. This indicates that it may be more or less than that amount. This is true for any type of pattern. It is also conceivable that sometimes a pattern may be larger than its preparation at the time the pattern is invested. The amount of change in the wax depends upon the extent of temperature change. Obviously, we must know the approximate temperature of the pattern as it fits its preparation in the mouth or as it fits the amalgam model. This is called the "adaptation temperature." By careful attention to our ways of manipulation we learn to estimate this factor. We must also know the laboratory temperature, because the difference between the "adaptation temperature" and that of the laboratory establishes the amount of wax shrinkage. Neither one of these temperatures, in itself, is important. It is the particular range between the two that counts.

Establishment of "Adaptation Temperature" of Wax Patterns

To make a direct pattern in an MOD cavity in a molar, the wax should be heated enough to ensure an easy flow. Then it should be placed in a matrix band and forced into the cavity. The pattern must not be cooled with cold water, but should be allowed gradually to attain the temperature of the tooth.

By manipulating the wax in this way it can be made to fill the cavity at approximately 95° F. (Thom) Also, internal strains will be at a minimum and the wax shrinkage, after removal from the cavity, will be uniform throughout the entire pattern.

On the other hand, if the pattern in the cavity is cooled with cold water, the occlusal portion of the wax will tend to stretch from mesial to distal. (Thom) Other portions may shrink freely. Wax may be added at the gingival, and this is

a good practice; but, when the pattern is replaced in the cavity, it attains the temperature of the tooth and again is carved at approximately 95° F. In this method of manipulation the internal strains will be increased. The more a direct MOD pattern is cooled in the mouth, the more difficult it becomes to make a casting which will completely seat itself at the gingival without an over-expansion from mesial to distal.

The anterior three-quarter crown pattern poses an interesting problem. The temperature in the anterior part of the mouth is somewhat lower than that of the posterior part of the mouth. The wax shrinkage is considerably less because the pattern is subjected to less cooling from mouth to laboratory and in a range where the shrinkage is less per degree. In fact, if the pattern is cooled with cold water in the mouth, the "adaptation temperature" may be established as low as that of the laboratory. Then there would be no wax shrinkage. These are the real reasons why a three-quarter crown usually needs less expansion than other restorations and we will compensate for the extent in which they occur only if we know what the reasons are.

Because I condemn arbitrary rules, let me suggest one that is not arbitrary. It seems to me that we can do nothing better with our present materials than to make our patterns fit accurately at the temperature prevailing in the area in which we are working. Under ordinary conditions, this will range from 85° F. in the anterior part of the mouth to 95° F. in the posterior part of the mouth, and the laboratory temperature if we are working indirectly.

Indirect patterns should be made to fit properly at room temperature. This is done by cooling the pattern while on the model, repairing and cooling again. These patterns, when placed in a cavity or on a preparation in the mouth, still remain a pattern made at room temperature. However, if a great deal of manipulation is carried on in the mouth, then the "adaptation temperature" tends to approach that of the tooth. Actually, as we manipulate the inlay wax, we are doing as much to establish the size of the casting as we are when working with the investment material.

The same factors prevail in the case of the full crown. It is interesting to note that a core of investment material will expand more when heated than a hollow mould and that the same full crown core will prevent some linear contraction of gold. Actually, when the casting problem is properly controlled, we find that the full crown needs less expansion than is generally assumed.

To Balance Shrinkages and Expansion

To the shrinkage of the gold alloy we add the wax shrinkage caused by the difference between the estimated "adaptation temperature" and the actual laboratory temperature. I use the following formula which may be altered to adjust for different materials and according to the desires of each individual operator.

WAX TEMPERATURE CHANGE	INVESTMENT CRISTOBALITE	GRAY
0	1*	1
5°	2	1
10°	3	1
15°	4	1
20°	8	1
25°	Straight	

*By weight

Manipulation of Investment Materials

The available investment materials will give us surprisingly uniform results if we eliminate unnecessary variables and allow the necessary expansions to take place uninhibited, and without being forced. That is, we should always use a thick mix of water and powder at room temperature, the W/P ratio being approximately 35/100 by weight. Heavy investment materials may require slightly less

water and the light materials will require more water.

To vary the thickness of the mix adds another variable to our process. We should line the casting ring with moist asbestos. Not to do this inhibits setting and thermal expansion, thereby adding another confusing variable.

About ten minutes after investing, the setting expansion of the investment material begins to take place. This setting action is very weak and will not stretch the invested wax pattern. (Skinner). However, the expansion will take place if the wax pattern is subjected to a gradual rise in temperature of approximately ½° F. per minute for twenty minutes. Some of this rise in temperature will be provided by the chemical action of the Plaster of Paris and water. However, it is necessary to protect the casting ring from moving air which might carry the heat away from the mass as fast as it is generated.

You will note that I suggest ten degrees rise in temperature as the setting expansion is taking place. More heat might cause an adverse effect. If the invested wax pattern of a full crown is expanded faster than the setting expansion is taking place, it will create a pressure on all walls of the mould, inward as well as outward. This would tend to prevent the setting expansion of the core which establishes the inside dimension of a crown casting.

The investment should be allowed to set for at least forty-five minutes. It should then be heated slowly to a temperature of 1300° F. Before casting, the gold alloy should be preheated with an oxygen flame, and the casting accomplished quickly, so as to avoid contraction of the mould by the loss of heat.

Conclusions

You may ask the question, "Do you disregard the size and type of pattern in determining the amount of required mould expansion?" I pay very little attention to these factors. Restorations of any particular type may require various amounts of expansion depending upon materials and methods of manipulation.

A core of investment material which is within a mass of congealing alloy may influence the amount of linear shrinkage. That is: the linear shrinkage of a thin three-quarter crown may be less than that of an MO inlay. However, before we can recognize and control these minor factors it is absolutely essential that we control the greater variables: namely, the total shrinkage of the gold alloy, the coefficient of expansion of wax and the changes in impression and model materials.

We may desire some castings, such as the three-quarter crown, to fit tighter than other restorations. This, however, is a very minor factor. It is not a part of the compensation for material changes and must not be considered as such. It is also within the realm of present-day practice that, if a three-quarter crown pattern is considerably smaller than its preparation, the expansion requirement may be greater than for a full crown if there is no wax shrinkage in the latter case.

It is my firm belief that a proper consideration for the factors discussed in this paper is essential for consistent results in the casting process. I say this because it is easy to demonstrate castings which are too small or too large by alteration from the recommended procedure in any one of the factors mentioned. Therefore, to disregard any one of them makes our casting problem a hit and miss proposition. This approach to the problem may seem difficult, but as we use it the casting problem becomes more comprehensible.

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Electron Microscope Studies of Tooth Structures and the Effect of Fluorine Upon Teeth*

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Introduction

Within the last few years research workers in this country have had available for their use a new research tool, the transmission electron microscope. Techniques have been developed making it possible to apply this new instrument to the study of the surface structures of such bulk materials as metals, minerals, glasses, ceramics and more recently hard biological tissues such as teeth and bones. [1, 2]

Electron Microscope and Replica Technique

An RCA, Type B transmission electron microscope was used in this work.[3, 4] This instrument differs from the familiar light microscope chiefly in that the visible light has been replaced by an electron beam whose wave length is 1/100,000 of that of light. This removes the principal resolution limiting factor existing in the light microscope and thereby allows a resolution 100x greater or down to about 3/1000 of one micron or even less. Since glass is opaque to electrons, glass lenses cannot be used to form the necessary images with the electron beam. However, suitable electromagnetic fields can be employed to obtain the desired electronic images.

Since electrons are readily scattered and absorbed by matter, bulk specimens, in order to be observed in the electron microscope, must be prepared to a thickness of less than 1 micron. However, since in the case of most materials it is very difficult with present day equipment to section or grind the material to such a thickness without undue distortion, an indirect method must be used for surface studies. This is accomplished by means of a replica in which case the surface contours of the bulk specimen are reproduced in a film replica, thin enough to be used directly for transmission study in the electron microscope.[5]

In this work on tooth structures a Dow developed replica technique, called the polystyrene-silica process, was used.[6] In this technique, the first step, whether the specimen be tooth or metal, is to prepare a plastic impression of the surface. This is accomplished by molding the thermoplastic resin, polystyrene against the surface and then separating the plastic impression from the specimen. Silica or quartz is then evaporated in high vacuum upon the surface of the polystyrene to form a thin film about 2/100 microns thick, which can be removed by dissolving the styrene in a solvent. The silica film is used directly in the microscope as the specimen.

Preparation of Tooth Specimens

Preparation of the teeth used in this work was accomplished by first sectioning the teeth, polishing and then etching.[7] Dilute aqueous solutions of hydrochloric acid were used for etching, with concentrations from .2 to 2% and etching

* *Presented at Pittsburgh Meeting of Pennsylvania State Dental Society on May 8, 1946.*

times from 2 to 10 seconds varying with the composition and solubility of the particular region being studied. A specimen is etched sufficiently to remove the tooth structure which has been distorted by the polishing process. Fig. 1 shows in (a) the polished enamel surface and in (b) the same section after light etching. The prepared surface is then reproduced with a film replica by the technique described in the preceding section. Fig. 2 shows the general type of result when this technique was applied to normal tooth structures.

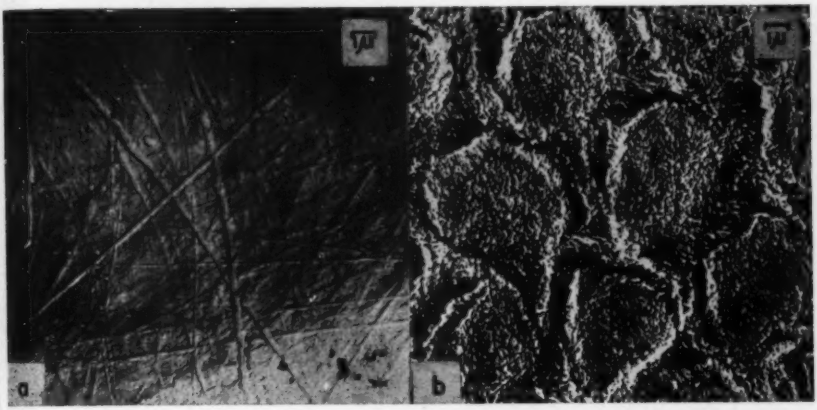

Fig. 1 (a) Internal enamel section given high polish by metallographic methods. Lines are scratches due to distortions during polishing. (b) Enamel section after light etching with HCl. Sample was etched sufficiently to remove distorted layer (scratches, etc.). Original magnifications 6500x.

Fluorine Literature Data

The widespread interest in the effect of fluorine upon dental caries resistance has led us to speculate as to whether the electron microscope might conceivably be used in gaining a better understanding of the action of fluorine upon dental tissues. It was thought that possibly the electron microscope might show microstructural differences between normal and fluorosed teeth which would throw light on the fluorine-dental caries relationship.

The literature has revealed that individuals using domestic waters containing appreciable fluorine (let us say above ½ ppm.), show a lowered caries incidence providing exposure was during the period of tooth calcification.[7]

The literature indicates that individuals who were exposed to fluorides during the critical period of tooth calcification, and afterward changed to a fluoride-free water supply, continued to have an increased caries resistance.[8] In the opposite case, where individuals who were exposed to fluoride-free waters during tooth developmental periods and later left such waters for those containing fluorides, no increase in dental caries resistance occurred.[9] These findings have indicated that fluorides, such as those occuring in public water supplies, will cause no change in caries incidence except where the individuals were exposed to the fluoride-containing waters during the period of tooth calcification. Since completely impacted or unerupted teeth from fluorine endemic areas often show motling, it follows that the fluorine arrives in the teeth via systemic ingestion and not surface absorption.

Analytical data on the enamel and dentin of fluorosed or mottled teeth shows that their fluorine content is 3 to 5 times greater than that of normal teeth and this fluorine content is directly proportional to caries resistance.[10, 11]

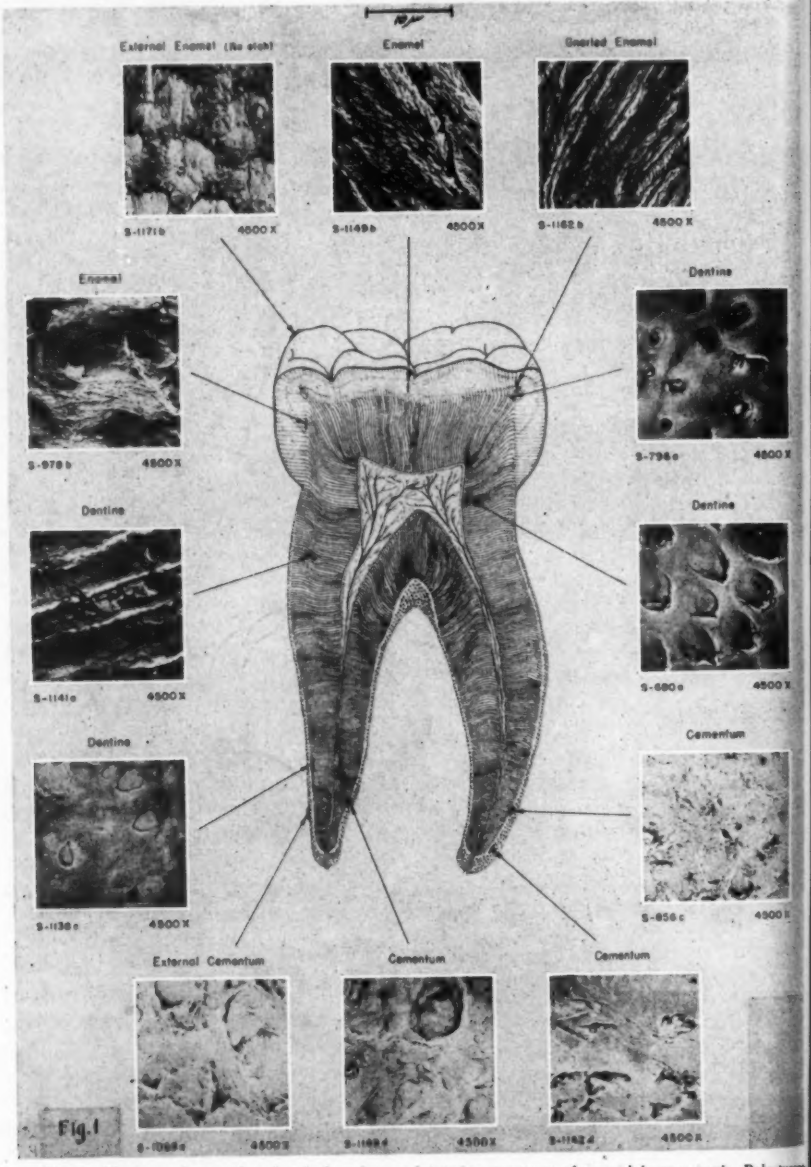

Fig. 2. Electron micrographs of etched surface and interior structures of normal human teeth. Polystyrene-silica replicas. Original magnifications—1650x.

A different angle of the fluorine-dental caries relationship lies with the topical application of soluble fluorides to the tooth surface *in situ*. Armstrong and Knutson and several other investigators have reported that such topical applications reduce caries by nearly 50%.[12,13] Further, Bibby [13] and Volker [14] have reported that fluorine is actually incorporated into the tooth enamel, at least on the surface, without appreciable systemic ingestion.[15]

This fluorine literature data just presented indicates that there is a difference in the mechanism of fluorine deposition in the case of the fluorosed teeth resulting from systemic ingestion as compared to teeth treated by topical application. One of the main purposes of this research with the electron microscope was to prove that different mechanisms of fluorine deposition really exist and to learn as much as possible concerning these mechanisms and their connection to the fluorine-dental caries relationship.

The parts of this paper concerned with fluorine are based upon very limited data which is quite preliminary in nature. However, it has been necessary to publish the data at this time since the work has had to be terminated.

Microstructural Comparisons

Comparisons between the polished and etched dentin of normal teeth and that of fluorosed teeth show a difference which seems to be of significance in this study. This difference is entirely one of the fineness of detail to be found in the etched matrix between the dentinal tubules, the fluorosed dentin showing the much finer detail. The appearance of this background structure varies somewhat from tooth to tooth and from region to region within a tooth; but regardless of these variations the particle dimensions remain in the same order of magnitude, roughly 0.01 microns for the fluorosed dentin to 0.1 microns for the normal dentin. These differences can be observed in the electron micrographs of figs. 3a and 3b which show normal and fluorosed dentin with the dentinal tubules sectioned nearly transversely in both cases.

Microstructural comparisons between the polished and etched enamel of various teeth are a much more difficult task. Normal enamel when polished and etched lightly with hydrochloric acid gives a surface which is exceedingly rough on a very fine scale. The roughness of this etched surface makes it necessary to dissolve the enamel section away from the polystyrene molding during the replica process. This very often results in leaving residues on the polystyrene surface which makes it difficult to obtain clean silica replicas. However, in the few cases in which fairly good results were obtained, it has appeared possible that the etched fluorosed enamel also showed a finer etch-structure than did the normal enamel. This difference is very difficult to evaluate since the etched normal enamel is so rough. The enamel comparison is illustrated in Figs. 3c and 3d in which the enamel rods have been sectioned transversely.

Since it was so difficult to obtain good replicas from etched enamel, an attempt was made to eliminate these difficulties by examining cleaved enamel structures without etching. This method of approach gave very good results as far as the quality of the replicas obtained was concerned, but gave no new light on fluorine deposition since both the normal and fluorosed teeth showed similar cleavage patterns.

Cleavage patterns were also obtained of dentin and here also, no significant differences could be observed between the unetched normal and fluorosed dentin.

Topical Applications of Fluorides

A number of experiments have been performed in which aqueous fluoride so-

lutions have been topically applied to normal extracted teeth. Generally the fluoride concentration and duration of application in the first experiments were much greater than those actually used in the topical applications reported in the literature. It was felt advisable to go to extremes at first in order to make the analytical data as definite as possible. This problem was made quite difficult since the electron and X-ray diffraction patterns for the hydroxy, carbonate, and fluor-apatites believed to exist in teeth are so similar as to be practically inseparable.

Normal enamel was polished and etched lightly to give a surface such as shown in Fig. 3c. The enamel was then immersed for about 1 month in a 4% aqueous solution of sodium fluoride and then washed and dried. A replica was prepared of the surface, showing it to be very dirty, probably due to the adherence of reaction products to the replica. However, some regions were clean showing the type of structure illustrated in Fig. 4a. The outlines of the enamel rods can still be seen though an entirely different general structure exists. Both electron and X-ray diffraction show this surface

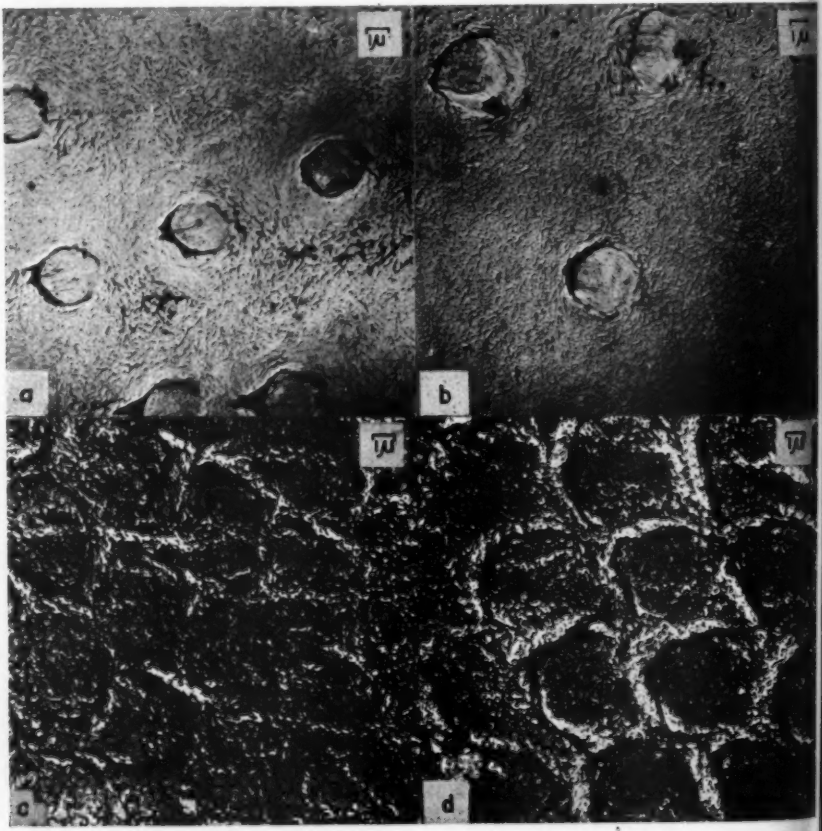

Fig. 3. Comparison between (a) normal and (b) fluorosed dentin etched with HCl and (c) normal and (d) fluorosed enamel etched with HCl. Original magnifications—6500x.

to consist of calcium fluoride.

In another experiment, normal enamel was sectioned, polished and then immersed in a 4% sodium fluoride solution for about 1 month. At the end of that time the specimen was etched in the conventional manner, but with little success. A replica was prepared of this specimen which showed that the surface was generally unattacked by the etchant except in localized pitted regions. Fig. 4b shows one of these pitted regions surrounded by the unattacked regions as indicated by the polishing scratches.

Further tests on this same specimen revealed that the acid resistance of the surface of the enamel had increased to such an extent that it was necessary to

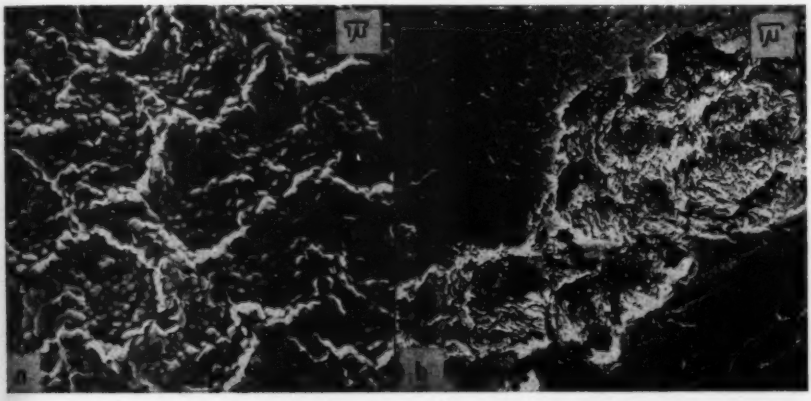

Fig. 4. (a) Normal enamel, polished and etched plus immersion in 4% solution fluoride solution. (b) Normal enamel, polished plus immersion in 4% sodium fluoride solution plus ordinary enamel HCl etch. Localized pit attack. Original magnifications—6500x.

use an HCl etchant whose concentration was 10 times that normally used in order to obtain the usual etch attack.

The literature has described the ease which pulverized enamel picks up fluorine from aqueous fluoride solutions.[14] This type of action was investigated by finely pulverizing normal enamel plus some dentin in a mortar. A sample of this pulverized enamel was dispersed in water, allowed to settle, and a sample of the finer suspended material examined directly in the electron microscope. Another sample of this same pulverized enamel was added to a 4% sodium fluoride solution and allowed to stand over-night, after which it was agitated, allowed to settle, and a sample of the finer suspended material examined directly in the microscope. Fig. 5a and 5b shows the comparison between the untreated and NaF-treated enamel.

X-ray diffraction analysis shows the untreated pulverized enamel to consist of 100% apatite and the fluoride-treated enamel to consist of 80 to 90% calcium fluoride with only 10 to 20% of apatite remaining.

Other tests on pulverized enamel immersed in a 2% sodium fluoride solution have shown that sufficient calcium fluoride is deposited in 30 minutes at human body temperatures to be recognizable as calcium fluorides by means of both X-ray and electron diffraction.

Mechanism of Fluorine Deposition

The literature data previously mentioned has shown that fluorine systemically ingested during tooth calcification enters into the tooth structure increasing

by several times the fluorine content of both enamel and dentin. Electron micrograph comparisons of cleaved but unetched normal and fluorosed enamel and dentin show no significant differences, indicating that the dispersion of fluorine is such that it does not greatly influence the fracture patterns of the normal apatite structure. However, when the fluorosed enamel or dentin is etched with hydrochloric acid, a new type of background structure appears indicating an exceedingly fine dispersion of a new mineral phase more resistant to the acid etchant than the hydroxy and carbonate-apatites normally found in teeth.

Theoretically it would seem probable that any new mineral phase appearing in a fluorosed tooth would consist of either calcium fluor-apatite or calcium fluoride. These two minerals with calcium hydroxy-apatite were roughly compared as to their relative solubilities in N/1 hydrochloric acid. The tests were made by adding 0.1 gram of the pulverized mineral to 50 ml. of acid for 2 hours at room temperature and determining the loss in weight. The data obtained was as follows:

Ca-hydroxy-apatite .....80% loss in weight in N/1 HCl after 2 hours.
Ca-fluor-apatite .....56% loss in weight in N/1 HCl after 2 hours.
Fluorite (calcium fluoride) ..Negligible loss in weight in N/1 HCl after 2 hours

A severely fluorosed tooth was sectioned and the internal enamel polished and etched with hydrochloric acid in the usual manner. Judging from past experience, such a surface should consist of a very fine dispersion of a material projecting in relief from the surface. This etched surface was then analyzed by electron diffraction using the reflection method whereby the electrons are diffracted by minute projections on the surface of the specimen. The results showed a strong pattern for apatite with not the slightest trace of the calcium fluoride lines which certainly would have been very strong if any of this practically insoluble compound had been present. This method of analysis could be expected to be very sensitive to even very minute quantities of calcium fluoride since it would project outward from the etched surface where electrons would be diffracted by it.

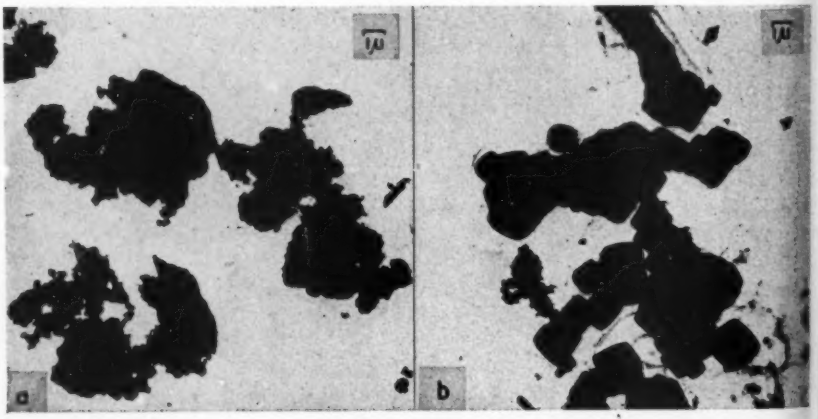

Fig. 5. Comparison between (a) normal pulverized enamel and (b) normal pulverized enamel after NaF treatment. Analysis shows (a) to consist of apatite and (b), largely CaF_2. Original magnifications—6500x.

It seems reasonable to believe that since calcium fluoride is not the projecting fine structure, and the analysis indicated it to be an apatite, it might be calcium fluor-apatite which is also less soluble than the ordinary apatite constitutents of teeth and would therefore, be projecting in relief following etching.

The evidence for the formation of calcium fluoride during topical applications of soluble fluorides to dental tissue has been covered quite thoroughly in preceding sections of this paper. All experiments have indicated that a double decomposition takes place between the apatite and the soluble fluoride. Other reaction products besides the calcium fluoride are probably leached away at least near the surface.

Theory of Fluorine-Dental Caries Relationship

In seeking an explanation for the decreased caries incidence which accompanies the entrance of fluorine into tooth structures, one certainly cannot completly ignore the increased acid resistance of enamel following topical application of fluorides or the probable resistance of all fluorosed teeth to acid.[16] However, the author does not feel that this matter of acid solubility is necessarily the major factor. Rather, it seems that the reduced caries incidence is due to a combination of inter-related factors including both the acid solubility and the effect of fluorine upon the oral lactobacillus acidophilus or other acidogens which cause dental caries.

It has appeared difficult, in the past, to correlate the mechanism of caries reduction in the case of systemically ingested fluorides with that occurring with topical applications of fluorides. No single hypothesis has seemed to fit both cases. However, there are two significant things which are common to both. In the first place, fluorine is incorporated into the tooth structure in both cases, and secondly, the fluoride compounds formed thereby are both more acid resistant than the normal apatite structures of teeth.

In the light of the data presented, a possible general mechanism explaining the fluorine-dental caries relationship might be as follows:

(1) The oral lactobacillus acidophilus or other acidogens produce acid which attacks the tooth surface preferentially, dissolving the more soluble apatites and leaving the less soluble but not completely insoluble fluoride compounds concentrated on the surface.

(2) This dissolution of the tooth surface by the acid-forming bacteria produces not only an increase in the concentration of fluoride compounds on the surface but also produces a solution containing progressively higher concentrations of fluoride ions *at the point of attack* and underneath bacterial plaques if present.

(3) This progressive concentrating of fluoride ions will continue until the concentration is such that it results in first, the inhibition of acid production starting at about 1 ppm. F and second, the inhibition of bacterial growth at about 250 ppm. F.[17] Thus a self-limiting equilibrium or bacteriostatic condition is produced which is not conducive to active dental caries.

Conclusions

1. The electron microscope in conjunction with the polystyrene-silica replica technique may be used successfully in studying both the histology and pathology of dental tissues.
2. The experimental evidence indicates that fluorine entering into a tooth during the formative period or period of calcification is laid down in the form of acid resistant calcium fluor-apatite.
3. The experimental evidence indicates that fluorine entering into a tooth following the completion of calcification, is laid down in the form of

acid resistant calcium fluoride.

4. A possible explanation of the fluorine-dental caries relationship lies in the concentrating of fluoride ions at the point of attack of the tooth enamel by the acid released by oral bacteria. Such fluoride ions may reach a sufficient concentration that a bacteriostatic or self-limiting equilibrium condition results in which active caries becomes inactive.

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11. Armstrong, W. D., and Brekhus, P. J., Possible Relationship Between the Fluorine Content of Enamel and Resistance to Dental Caries, J. D. Res., *17*: 393, 1938.
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OPPORTUNITIES IN LABRADOR AND NORTHERN NEWFOUNDLAND

The International Grenfell Association provides the only established medical care for the people on the coasts of Labrador and Northern Newfoundland. The work offers unique, valuable and enjoyable experience, in a subarctic and rugged country.

Dentists are needed for three districts on a year's contract, starting as soon as possible. Preference is given to young unmarried applicants.

Maintenance and travel are met by the Association. Salary depends on experience —$1,500 a year for a well-qualified candidate. For further information, please apply:

STAFF SELECTION COMMITTEE
INTERNATIONAL GRENFELL ASSOCIATION
156 Fifth Avenue, New York 10, N. Y.
(Tel. CH 3-1646)

acid resistant calcium fluoride.

4. A possible explanation of the fluorine-dental caries relationship lies in the concentrating of fluoride ions at the point of attack of the tooth enamel by the acid released by oral bacteria. Such fluoride ions may reach a sufficient concentration that a bacteriostatic or self-limiting equilibrium condition results in which active caries becomes inactive.

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5. Heidenreich, R. D., Techniques in Applied Electron Microscopy, J. Opt. Soc. Am., *35*: 139, 1945.
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OPPORTUNITIES IN LABRADOR AND NORTHERN NEWFOUNDLAND

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STAFF SELECTION COMMITTEE
INTERNATIONAL GRENFELL ASSOCIATION
156 Fifth Avenue, New York 10, N. Y.
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Report of the Executive Secretary and the Harrisburg Office

MR. RAY COBAUGH

As this report goes to press, approximately 2,500 applications for appointment as Participating Dentists in the Veterans Administration's program have been processed through this office. The clerical work involved more than keeps us busy here in Harrisburg and in addition to this each day's mail brings specific inquiries about the program, which necessitates much correspondence.

So far as possible, this office has tried to relieve Dr. Wm. Perry Manning, the Chairman of the State Council on Veterans Affairs, of all routine work connected with the processing of the applications and the answering of various questions. It is necessary, however, frequently to consult with him and frequently to report a delicate problem to him for consideration and decision. Generally speaking, the program is being well received and it is expected, as the local Society becomes familiar with it, that many of the little things which now are causing some difficulty will be ironed out and it will function smoothly.

Pennsylvania seems assured of a full delegation to the ADA sessions in Miami and a complete report of the actions of the assembled delegates will follow in subsequent issues of our JOURNAL.

Your Secretary has visited several meetings to report on the work of the Harrisburg office, with particular emphasis on the Veterans Administration program and during the next month many more talks of this nature are scheduled.

The Council on Dental Health is to have a meeting here in Harrisburg for the purpose of considering ways and means of reviving programs which of necessity were somewhat deemphasized during the war. Principal among these will be a condensation of the matter of text material from which the subject of Oral Health is taught in the principal colleges preparing teachers for our public schools.

At a recent meeting of the Legislature Committee several timely subjects were discussed and a concrete step made on the matter of revising the Dental Internship Regulations in Pennsylvania so that graduates who have signified their intentions to take the next dental examination could serve an internship in a certified and improved institution prior to meeting all the requirements for registration.

Among the other interesting programs being developed is an attempt on the part of this office to complete records of the State Society since its beginning in 1868 and next month we hope to have an index of this material for publication so that a request notice can be inserted in the BUL-

LETIN for those few volumes which are missing. It is the hope of the History Committee that with the cooperation of the various component societies of the State organization that we will be able to fill in all the gaps.

With the return of servicemen and the cooperative drives staged by each district, the membership of the Pennsylvania State Dental Society stands as of October 15th, 4,719, which is the highest number ever registered.

Sincerely,

RAY COBAUGH,

SCIENTIFIC BASIS, ETC. (Cont.)

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Welcome Back to Civilian Practice

FIRST DISTRICT

Amsterdam, Morton
Bunkin, Milton S.
Cutler, Isadore
Denenberg, Samuel
Denney, E. W.
Entine, Bernard
Feingold, Elmer A.
Gorelick, Benjamin A.
Greene, David J.
Jacobs, Simon G.
Kuiper, Klaudius
Lyons, Edward J.
Mamlin, Abraham
Monteleone, Martin M.
Mitchell, Theodore
Mortimer, George J.
Oltman, Jacob
Spector, Aaron
Suisman, Irvin

SIXTH DISTRICT

Blase, A. J.
DeCubler, C. L.
Henry, H.
Knights, E. B.
Steck, J. A.
Snido, Stanley
Waltz, D. E.
Yoder, J. H.

NINTH DISTRICT

Hogan, B.

NOTICE

There will be a meeting of the Board of Trustees of the Pennsylvania State Dental Society at the William Penn Hotel, Pittsburgh, Tuesday afternoon, November 5, at 2 o'clock.

All Committee Chairmen who have not yet prepared a report for this meeting are asked to do so immediately and forward it to the central office of the Dental Society at 217 State Street.

Doings at Your Alma Mater

TEMPLE UNIVERSITY

JOHN E. BUHLER

The University will have eight members of its faculty in attendance at the meeting of the House of Delegates of the American Dental Association and at the meetings of other dental organizations in Miami in October. Dean Timmons will be there as a Delegate from the Pennsylvania State Dental Society while Drs. J. Wallace Forbes and Lawrence E. Hess will serve as Alternates. Drs. James R. Cameron and J. J. Stetzer, Jr., Professor and Associate Professor of Oral Surgery, will be attending the Meeting of the American Society of Oral Surgeons, where Dr. Cameron will read a paper. Dean Timmons and Dr. John E. Buhler will attend the Meeting of the Executive Committee of the American Association of Dental Schools. Drs. Sumner Pallardy and Buhler will attend the Meeting of the Council of Deputies and the National Meeting of the Supreme Chapter of Delta Sigma Delta. Dr. James W. Craig, although not a delegate, plans to be present at the A. D. A. and other meetings.

Dr. Sumner Pallardy, Professor of Prosthetic Dentistry, and Dr. John E. Buhler gave a joint program before the Monmouth (N. J.) Dental Society on October 3rd, which was devoted to a discussion of the advantages and techniques for immediate full denture prosthesis.

It was with great distress that we recently learned of a tragedy which befell one of our recent graduates. Lt. Edward L. Grubin, a graduate of the Class of April 14, 1945, was on duty with the Army Dental Corps in the Philippines when he contracted Poliomyelitis. At the present time he is hospitalized in the Army and Navy General Hospital in Hot Springs, Arkansas, both legs being completely paralyzed below the hips.

During his student days here at the University, Eddie was an entertainer of no small renown, giving among other things, a series of pantomimes to the accompaniment of recordings. Those of you who are Temple Alumni and who have attended the Annual Student Alumni Christmas Parties at Mitten Hall will recall Eddie's side-splitting shows. He was also one of the popular comedians who appeared at various U. S. O. centers on a quite regular circuit.

Lt. Grubin's school activities, besides those of a student, were not by any means confined to entertainment, but had a literary bent as well, for he was the Editor-in-Chief of the Dental School section of the 1945 Templar, the University's Annual Yearbook.

Those who have seen Eddie perform and have enjoyed his good humor or those who knew him as a fellow student or friend, would be doing a mighty nice thing if you would just take a couple of minutes or so to drop him a note. I'm sure he'd really appreciate hearing from any of you.

Dean Timmons recently announced two new additions to the faculty: Dr. James M. Tucker and Dr. Bernard B. Saturen.

Dr. Tucker received his B. S. degree from St. Joseph's College and his M. D. from Jefferson Medical College, and served his internship at Germantown Hospital. He spent three years in the Army Medical Corps, and is presently serving a residency in Pathology at Lankenau Hospital. Dr. Tucker is assisting Dr. Andrew J. Donnelly as an instructor in General Pathology.

Dr. Saturen received his degree in den-

tistry from Temple in 1932 and has since done advanced studies in Periodontia; in 1942 he was certified by the American Board of Periodontology. He is a past President of the Philadelphia Society of Periodontology. Dr. Saturen is serving as a clinical instructor in Periodontia.

Dr. Jacoby Rothner has appeared as speaker on two dental programs thus far this season: on September 12th, he addressed the Dental Explorers Study Club and on September 18th, the Dental Society of Southern New Jersey. Both programs were concerned with problems in Periodontia.

UNIVERSITY OF PITTSBURGH

J. S. OARTEL

At this time there is little to add to last month's recital of "doings" at Pitt. After two football games it looks as though Pitt is coming back in the football world. George Ranii, sophomore dental student, is the School of Dentistry's contribution to the varsity team. And you probably know that Dr. Jock Sutherland's Steelers are becoming rather well known in professional football.

Registration for predental students was held the week of September 16 with an unprecedented number of predents entering the College. Registration for dental students was held September 23. A capacity freshman class of ninety-six registered that day but to date (October 2) have not been able to begin their studies. The day after registration the power strike began and Pittsburgh has been in semi-darkness ever since. Aptitude tests for freshmen have been postponed as well as all classes and clinical work until the power strike ends.

In September all alumni of the University of Pittsburgh received a copy of the first issue of THE ALUMNI NEWS REVIEW, the new publication of the General Alumni Association of the University. This publication is to be issued every sixty days and, to some extent, makes this column rather superfluous in that news of each school, the School of Dentistry included, is presented in this publication.

UNIVERSITY OF PENNSYLVANIA

GORDON R. WINTER

The first year class is predominantly composed of ex-service men, 115 in a class of 140. The average age of the class is 24 years, the youngest being 18 and the oldest 35 years of age. In selecting the group, the members of the Admissions Committee made every effort to accept those men who exhibited a definite purpose and firm desire to study dentistry, and who, in their opinion, would be an asset to the profession after graduation. The task was made extremely difficult since four applications were received for each vacancy in the class. The sound judgment of the committee in selecting the class is already confirmed in the opinions of the teaching staff, who have had contact with the group. They feel that this is one of the most promising classes admitted to the school in recent years, and are extremely favorably impressed with the general intelligence of the class, their eagerness to learn, and their desire to get on with their work. Since this is the first post-war class, composed mainly of ex-service men whose education has been delayed and the average age of the group is well above the usual average, it is expected that this class will go on to be one of the finest to graduate from Pennsylvania.

In order to correct in part the old adage that the "shoemaker is always without shoes" insofar as it relates to the dental student at school, an oral health program has been instituted which requires that all students have a complete oral diagnosis twice each school year, to be followed by corrective procedures whenever it is found necessary. This will require every dental student to exhibit an exemplary state of mouth health and permit

him, first as a student, and later as a practitioner, to sound convincing, and to be an example to his patients. The program includes a complete clinical roentgenologic, study model examination and charting, followed by a consultation with a member of the oral health committee who will recommend the work to be done. At the end of each semester a member of the committee will examine the student to make certain that the required treatment has been completed. This will follow each year until such time as the student is ready for graduation, no student will be recommended for his degree until his mouth is in a satisfactory state of oral health and function.

The members of the oral health committee who are participating in this program are as follows: Drs. Julio Asturias, I. B. Bender, John J. Berg, Paul E. Boyle, Lester W. Burket, Herbert L. Fischer, Arthur B. Gabel, Gladwyn Graham, John H. Greene, H. B. Greeson, Louis I. Grossman, Norman R. Haig, Roy Hand, Andrew F. Jackson, J. Stanley Jordan, Ward C. Miller, Mary M. Moore, Vincent P. McNally, Edwin G. Owen, Charles H. Patton, E. Howell Smith, John H. Stine, Gordon R. Winter, Wilson Zerfing, Frederick R. Stathers, Geneva E. Groth, Bertha L. Eastwood, Robert G. Skinner, Richard M. Skidmore, John D. Newell.

In cooperation with the Council on Dental Education of the American Dental Association, all entering first year students were given the Dental Aptitude Test. The testing required a total of eight hours and consisted of a battery of seven different tests, designed to measure the student's intelligence and general ability to pursue a scientific course of study in dentistry. When the results are compiled by the Council and sufficient data assembled on many students over a period of time, it may aid in determining a candidate's ability to study dentistry. This is a far-reaching step forward in the progressive dental education program in this country, as these tests were given in all dental schools of the United States.

During the war years, the Library collected and held duplicate copies of dental journals for libraries in European countries. This Summer some of those journals started to the libraries that needed them. Two huge wooden packing cases left Philadelphia to go with the Ivory Cross Expedition to the University of Utrecht. The Journal of the American Dental Association, Journal of Dental Research, Dentistry, Dental Items of Interest, Dental Digest, American Journal of Orthodontics, and Journal of Oral Surgery filled the cases. Where possible, complete sets were sent.

For the use of dental libraries in France, we sent two sets of the Journal of the American Dental Association, 1930 to 1945, Dentistry Dental Survey and Oral Hygiene.

We were able to find out from the British Dental Association what they needed, and sent six cartons filling most of those wants.

The material most in demand is that published from 1940 to 1945, although many libraries were completely destroyed, and so need everything. It is due to the generosity of our Faculty and Alumni that we have been able to send these copies, and we plan to continue to send what we can.

The Council on Dental Therapeutics of the American Dental Association has made an award of $500 to Dr. Arthur B. Gabel, Darby Professor of Operative Dentistry, for an investigation in collaboration with Dr. Paul E. Boyle, Professor of Oral Pathology; Dr. Grayson P. McCouch, Assistant Professor of Physiology, and Dr. R. S. Landes.

The investigation, which has been under way for several months, is a study of pain transmission in teeth.

Dr. John Burkhardt, Jr., gave a paper on "Recent Developments in Dentistry in

the U. S. A." before the American Business Men's Club in Amsterdam, Holland.

Dr. Vincent R. Trapozzano gave a full denture post-graduate course at the Essex County Dental Society Center at East Orange, N. J., on diagnosis and treatment planning. The course consisted of lectures and clinical demonstrations. Dr. Trapozzano recently completed a post-graduate course at the Dental School on the same subject.

Dr. Lester W. Burket has been elected to Fellowship in the American Academy of Oral Pathology.

"Surgical Aspects Pertaining to Dental Prosthesis" was the subject of Dr. Thomas M. Meloy's paper at the recent meeting of the Dental Society of Chester and Delaware Counties of Pennsylvania.

Dr. Paul H. G. Simonsen has completed his first one-week course of the year in Ceramics at the School of Dentistry.

'00 D Harold I. Cragin, formerly instructor in the Dental School, is now practicing dentistry at 407 Cook Street, Camden, N. J.

'11 D Arthur T. Vickers' marriage to Miss Bess Roberts of Camden, N. J., was recently announced.

'23 D Frederick E. Schmidt, Lt. Col., U. S. Army, has returned to civilian practice after serving in the army since September 15, 1941. He served 26 months at O'Reilly General Hospital, Springfield, Mo., and the remainder of the time in England and France. E. T. O.

'26 D Alan C. McLeod has been appointed Dental Surgeon to the King of England, 4 Wimpole Street, W1, London, Eng.

'28 D John G. Carr has been elected Secretary of the New Jersey State Dental Society.

'32 D Ford W. Stevens gave a post-graduate course at the Essex County Dental Society Center, East Orange, N. J., on Acrylics and Acrylic Bridgework.

'32 D Norman T. Sauer of Asbury Park has been appointed a member of the New Jersey State Board of Registration and Examination in Dentistry.

'38 D Ned B. Williams has returned to the Zoller Clinic Staff after three and one-half years in the Army's Walter Reed Hospital, where he attained the rank of Major in the Dental Corps.

'45 D Roger Evans Barton, 1st Lieut. U. S. Army, is now stationed at Yokahama, Japan.

'46 D Daniel Richard Moynihan, Jr., married Miss Marea Anne Buehring, graduate of the Department of Oral Hygiene, '45, at Brookline, Mass.

'46 D George J. Shelly's marriage to Miss Mary Kittleman took place August 31, 1946, at Battle Creek, Mich.

'46 D Irving H. Cohen, Lt. (jg), U. S. P. H. S., is now stationed at Fort Worth, Texas.

'46 D Anthony L. Egitto is serving as 1st Lt. in the Army Dental Corps at San Antonio, Texas.

'46 D Melvin A. Andell, A. V. S., has been commissioned 1st Lt. in the Dental Corps.

'46 D Murray P. Rothman, A. V. S., has been commissioned 1st Lt. in the Dental Corps.

'46 D Claude E. Stedman arrived at the Panama Canal Zone, where he is serving as 1st Lt. in the U. S. Army.

'46 D Robert MacDonald Brubaker is now stationed at Yokahama, Japan.

'46 D Morton R. Brenner is serving as 1st Lt. with the U. S. Army at Yokahama, Japan.

'46 D Stephen R. Shivey is now a 1st Lt. in the U. S. Army serving in the Panama Canal Zone.

'46 D William Pearlstine, 1st Lt. U. S. Army, has been stationed in Alaska.

'46 D Peter F. Fedi, Jr., has opened his office in Southampton, L. I., N. Y.

'46 D Albert W. Schilke was recently married to Cornelia Susan Kirchheimer, in Miami, Florida. Mrs. Schilke was a member of the '45 class in Oral Hygiene.

Post Graduate Courses at University of Pennsylvania

THE THOMAS W. EVANS MUSEUM AND DENTAL INSTITUTE
SCHOOL OF DENTISTRY UNIVERSITY OF PENNSYLVANIA

A POSTGRADUATE COURSE IN PARTIAL DENTURES

DIRECTOR, VINCENT R. TRAPOZZANO, D.D.S.

In this course emphasis will be placed on the design of partial dentures with external attachments. The course will consist of lecture demonstrations, clinical and laboratory practice.

The course is offered to a limited number of dentists (not less than 4 and not more than 6).

The properties of impression materials such as hydrocolloids and alginates will be discussed and the use of these materials demonstrated. Clinical and laboratory practice will include the making of impressions, study models, securing bite relations for the mounting of both study models and final casts on an articulator, the use of a surveyor and the designing of partial dentures. All instruments and supplies will be furnished by the school.

This course will extend over a period of two weeks for a total of 42 hours. Classes will meet 3 times weekly from 9 A. M. to 5 P. M., on Monday, Wednesday and Friday on the following dates: November 15, 18, 20, 22, 25, 27, 1946. $150.00.

For further information, address the Dean, School of Dentistry, University of Pennsylvania, 4001 Spruce Street, Philadelphia 4, Pa.

A POSTGRADUATE COURSE IN FIXED PARTIAL PROSTHESIS

DIRECTOR, JOHN STANLEY JORDAN, D.D.S.

NOVEMBER 11, 12, 13, 14, 15, 16, 1946
Hours, 2 to 6 P. M.

Size of class limited: not less than 6, not more than 8.

Staff: Director, J. S. Jordan, D.D.S. Diagnosis, L. W. Burket, D.D.S., M.D. X-Ray, LeRoy M. Ennis, D.D.S. Abutments and Inlays, Ulio Asturia, D.D.S.

Course will be conducted as a series of lecture demonstrations, followed each day by clinical and laboratory demonstrations.

MONDAY, NOVEMBER 11

2-4 P. M. Lecture and Demonstration.

Introduction. Diagnosis and Case Planning. Presentation of the factors determining the selection of the fixed bridge to replace lost dentition.

4-6 P. M. Clinical Demonstration.

Case study. Study models and X-Ray.

TUESDAY, NOVEMBER 12

2-4 P. M. Lecture and Demonstration.

Selection of abutment and retainers.

4-6 P. M. Clinical Demonstration.

Problems in abutment selection.

WEDNESDAY, NOVEMBER 13

2-4 P. M. Lecture and Demonstration.

Preparation of fixed bridge abutments.

4-6 P. M. Clinical Demonstration.

Preparation of classical abutments and retainers.

THURSDAY, NOVEMBER 14

2-4 P. M. Lecture and Demonstration.

Methods of bridge construction. Study of pontics and their construction.

4-6 P. M. Clinical Demonstration.

Table clinics on methods. Impressions and models. Articulation and bite study.

FRIDAY, NOVEMBER 15

2-4 P. M. Lecture and Demonstration.

Further study of bridge construction. Investing, soldering, and finishing.

4-6 P. M. Clinical Demonstration.

Steps in bridge construction. Glazing and heat treating.

SATURDAY, NOVEMBER 16

2-4 P. M. Lecture and Demonstration.

Review of Instruments. Repairs. Cementation and finishing bridge in the mouth.

4-6 P. M. Clinical Demonstration.

Bridge try-in and finishing. Cementation. Adjustments.

The fee for the course is $75.00, $25.00 of which should be sent with the application for the first course not later than October 28, 1946.

For further information, address the Dean, School of Dentistry, University of Pennsylvania, 4001 Spruce Street, Philadelphia 4, Pa.

Pennsylvania Society for Crippled Children

That a child does not have to be hale and hearty, sound of chest and limb to have a good time and absorb the benefits of camp life was proved again this summer at Camp Daddy Allen, high in the Poconos near White Haven.

Here for the sixth year the Pennsylvania Society for Crippled Children offered a chance for handicapped youngsters from all parts of the state to take part in a camp schedule that followed as normal a pattern as possible.

Not one of the boys and girls who were at Camp Daddy Allen was entirely sound of body. They had been crippled by arthritis, cerebral palsy, infantile paralysis, bone tuberculosis, or more obscure causes. They were youngsters from convalescent homes, hospitals, and schools. Most of them wore leg braces. Some hobbled on crutches. Yet they demonstrated that camping is an opportunity for that fullness of life barred in so many instances by physical handicaps.

Cooperating with the Pennsylvania Society for Crippled Children in maintaining the camp were 42 local societies affiliated with the State organization. Active among these local groups were members of those units of the Pennsylvania State Dental Society in communities that have adopted care and treatment of the physically handicapped as a prime objective of their welfare program.

"It is the fundamental purpose of Camp Daddy Allen," asserts George B. Cobb, executive director of the State society, "to develop the physical, mental, and spiritual health and growth of the children. We hope to give them, in addition to the love of the out-of-doors, certain social adjustments and development of initiative and self-confidence."

Mr. Cobb explained further that at Camp Daddy Allen to be handicapped is to be normal. The afflicted child there sees other children who are worse than himself and, as a result, he is encouraged and ceases to be as much depressed over his own condition.

Camp Daddy Allen was designed to fit the needs of the children. Handrails were installed along steep paths and wooden ramps were constructed instead of stairs. The children were given extra sleep and special exercises under direction of experienced physiotherapists. Braces, crutches, and special shoes were checked regularly.

In seeking to develop as normal a camp schedule as conditions would permit, short hikes were a part of the routine. Because of its therapeutic value, swimming became a regular activity. There were daily ball games. Some who were unable to run could hop. Those who were not able to do much else acted as umpires or scorekeepers. Once in a while, a boy with a bad leg hit and another fellow ran bases for him.

Camp Daddy Allen is one of a number of activities in behalf of the handicapped sponsored by the Pennsylvania Society for Crippled Children. Funds by which the program is conducted are derived from the annual sale of Easter Seals.

Figures of the Society disclose that more than 5000 handicapped children were helped in Pennsylvania during the past year through services of the State organization and its affiliated local units.

District News

FIRST DISTRICT

MARTIN A. SALAS, *Editor*

The fall season of the Philadelphia County Dental Society was auspiciously inaugurated when an overflowing audience came to the Bellevue-Stratford Hotel to hear Dr. R. Schlosser of Northwestern University Dental School, speak on the "Advantages of Immediate Denture Procedures in Complete Denture Prosthesis." The essayist gave his own technique in producing desirous results, emphasizing the advantages to patient and operator, the laboratory and clinical procedures, and the use of sectional impressions. The second half of the program was devoted to excellent colored photography, at which time Dr. Schlosser brought attention to the "Poetic License" of the dentist; that is, his ability to form a creative condition in relation to the patient. Drs. Pallardy, Howell-Smith, and DeVan commented.

Other societies in Philadelphia are planning a tremendous season. The Philadelphia Society of Periodontists will have Dr. Levon M. Saghirian speak on the "Use of the High Frequency Electric Knife in Periodontal Surgery," on October 29, and November 29 will bring Dr. John A. Kolmer of Temple University Medical School, to speak on "Periodontal Infection in Relation to Clinical Medicine." The Pennsylvania Society of Dentistry for Children is presenting a digest of the new book, Juvenile Dentistry, by Walter C. McBride, on Monday, November 18, at the Philadelphia Dental Club. Dr. DeVan, director of Post-graduate Protheses at the University of Pennsylvania, will speak to the North Philadelphia Society on November 13 at 8 P. M. on "Impression Technique for Full Dentures." Eastern Dental Society will present on November 21 Dr. I. Franklin Miller of Pittsburgh. His topic—"Full Mouth Reconstruction with Acrylic and Precision Attachments." This will be held at the Philadelphia County Medical Society Building.

From all indications of the first scientific get-together the First District will have a successful season. The next meeting on Wednesday, November 6, will bring Dr. Kurt Thoma, Professor of Oral Surgery and Brackett Professor of Oral Pathology, Harvard School of Dental Medicine; Oral Surgeon and Chief of Dental Department, Massachusetts General Hospital in Boston. He will show colored slides of oral lesions of cancer and stress the dentists' viewpoint of "Oral Cancer."

SECOND DISTRICT

J. F. SCULL, *Editor*

The Second District Dental Society held its Fifteenth Annual Meeting on October 2nd and 3rd at the Hotel Traylor in Allentown. The clinicians were Dr. Allan N. Arvins of New York City, Dr. Benjamin Kornfeld of New York City and Dr. Wm. W. Hurst of Cleveland, Ohio.

The following officers were elected for the ensuing year:

President, Dr. Elton G. Gilbert, Allentown; President-Elect, Dr. A. L. Ventura, Norristown; Second Vice-President, Dr. John E. Wittek, Norwood; Secretary, Dr. J. Frederic Scull, Langhorne; Treasurer, Dr. Howard Curtis; Trustee to State Society, Dr. H. C. Watson, Chester; Board of Directors, 1946, Dr. Paul R. Clayton, Dr. S. W. Mackie, Dr. O. B. Landis; 1946-47, Dr. Frederick Lutz, Dr. Ralph B. Hess, Dr. R. M. McClennan.

THIRD DISTRICT

J. E. MANLEY, *Editor*

Scranton District Dental Society

The Scranton District Dental Society started the Fall program with a double feature, September 23rd, in the Chamber of Commerce.

In the afternoon, Dr. Walter E. Briggs of Attleboro, Mass., gave the Dental Hygienists and assistants a health lecture.

In the evening Dr. Briggs gave a lecture on visual education of the Patient and Preventative Dentistry with Kodachrome slides.

FIFTH DISTRICT

R. W. BOLTON, *Editor*

The Fifth District Annual Meeting will be held at the Hotel Yorktowne in York on November 7th. The program is not complete at this date but we are pleased to announce that the following eminent scientists and teachers will be present: Dr. Sumner Pollardy, Professor of Prosthetic Dentistry, Temple University; Dr. Philip Jay, Research Professor, University of Michigan.

These outstanding teachers deserve a large attendance, which the committee hopes will be forthcoming. The sessions will start at 10 A. M. and conclude with a dinner meeting in the evening.

York County Dental Society

On Friday, October 4th, the York Society was addressed by Dr. Gordon Winter, Prof. of Oral Medicine from the School of Dentistry, University of Pennsylvania.

SIXTH DISTRICT

CHARLES A. SUTLIFF, *Editor*

After a four-month hiatus this district Editor will again be able to resume his assigned task. Profound apologies are herewith made.

We welcome these boys who have returned to civilian practice after having served so faithfully in the Armed Forces of our country: The Doctors A. J. Blase, C. L. DeCubber, H. Henry, E. B. Knights, J. A. Steck, Stanley Smith, D. E. Waltz, J. H. Yoder. It was a solemn step they took and those of us who remained at home are all proud of what they did. Lycoming Dental Society has placed in the newspapers a dignified notice and it is earnestly hoped that they rapidly regain their civilian status. If any name has been omitted, please let your Editor know so due mention can be made.

Sixth District Editor finds he is practicing bookkeeping more than dentistry. Any patient desiring service has the right to expect the best within the power of the practitioner. Today, we, all of us, find ourselves filling out quadruplicate copies for the unfortunate; multiple copies for the Veterans Administration; and innumerable records, scholastic excuses and letters. If I were to editorialize it would be concerning these iniquities. In the way of constructive criticism I feel the societies should get together with the various departments to cut DOWN this paper work. Amen.

SEVENTH DISTRICT

JULIUS L. PORIAS, *Editor*

Cambria County Dental Society

Dr. I. Franklin Miller, of Pittsburgh, was the clinician for our September meeting, held at the Capitol Hotel in Johnstown on the 30th. This being the first meeting after the summer layoff, a large number were present. They heard a really fine talk by Dr. Miller on "Acrylics." He showed methods of using fixed bridges and partials, using acrylic materials—in most cases reinforced with gold on the areas of attrition and stress—to rebuild the entire dental structure with wonderful cosmetic effect and masticating efficiency. Dr. Miller is not only a fine talker and dentist, he is an artist in his line.

Drs. A. R. Choby and L. J. Wesner, both of Johnstown, were taken in as new members.

Dr. Thomas W. Ling, formerly of Johnstown, who has retired and moved to Largo, Florida, was made an honorary member of the Society and a plaque is to be obtained and sent to him suitably inscribed.

The ladies met at the home of Dr. and Mrs. C. S. Fleck and had a covered dish dinner. After this they played cards.

EIGHTH DISTRICT

L. ROBERT CUPP, *Editor*

The Fifteenth Annual Meeting of the Eighth District was held at the Kane Country Club on Thursday, June 13. This meeting was well arranged by Dr. Wenk and his committee. There were 11 reservations.

Dr. A. J. T. Barton, of Erie, presented a full morning's clinic on "Cavity Preparation for, and Manipulation of, Amalgam."

Guests included Dr. Willits, President-Elect of the State Society, and State Secretary Ray Cobough.

Luncheon was served at the Club and was followed by the business meeting and election of officers. Dr. Wenk expressed greetings from Hollister, Dr. H. D. Roberts gave the trustees' report, Dr. Devere King was given recognition of the honor of receiving the 50-year key from Temple, Dr. Latshard of Rimersburg was accepted into membership, Dr. Campbell gave the auditor's report, Dr. Bastress won the $10.00 door prize contributed by the Co-Operative Laboratories, Jansen Dental Laboratories distributed complimentary ash trays, and golf trophies were presented by Williams.

The officers elected were as follows: President, Dr. K. E. Wenk; Vice-President, Dr. J. R. Elliot; Secretary-Treasurer, Dr. C. Lathrop; Editor-Historian, Dr. L. Robert Cupp; Trustee, Dr. H. D. Roberts.

Dr. J. M. Crosby was elected Delegate to the national convention with Dr. Ryan as alternate. Dr. Fleming was elected Delegate to the state convention, with Dr. Jack as alternate.

The Bradford Dental Society held a well-attended meeting at the Hotel Emery on September 18. Dinner was served at 6:30. Dr. Hoenig presided and a movie was presented on "Muco-Seal Technique."

A reminder to the members of the Eighth District—No news may sometimes mean good news but no news is not good for this column—send it along.

NINTH DISTRICT

RALPH V. SHELDON, *Editor*

Erie County Dental Society

The Annual Fall meeting of the Erie County Dental Society was held at the Kahkwa Country Club on September 25, with about sixty members present. With perfect weather on hand, a most enjoyable afternoon was spent at golf and some of the various other sports. A tasty buffet dinner was served and following the business meeting the members were entertained by Joe Gould, a famous big-time circus clown, who is well traveled and a keen student of human nature.

The meeting of October 16 featured a talk by Evan High, of Caulk's, who discussed materials and their technics. Another technical meeting will be held November 20. Plans for the annual Xmas Party are already under way and the date has been set for December 14 at Sunset Inn.

NECROLOGY

Dr. Robert S. Fichthorn, of Erie, died suddenly of a heart attack on September 23. Dr. Fichthorn was a native of Manorville, Pa., was graduated from Kittaning High School and the University of Pittsburgh, and had practiced in Erie for twenty years. He was a member of the Erie County Dental Society and the Orion Club. He is survived by his widow, Mrs. Emma Biebel Fichthorn, his mother, two sisters and four brothers.

Crawford County Dental Society

The first Fall meeting was held at Waller's Tavern, September 18th. The new officers officiated.

President, Dr. R. W. Ellsworth; Vice-President, Dr. Andrew Mook; Secretary-Treasurer, Dr. F. F. Waelde.

Dr. Bob Hogan, after being in service for a couple of years, has reopened his offices.

Dr. A. J. Barton of Erie gave us an excellent clinic on Amalgam, using the pneumatic plugger. He was accompanied by his assistant and a patient, who showed many beautiful amalgam restorations.

I am enclosing a letter which we have sent out to ALL the dentists (non-members also) in Crawford County.

"It has come to the attention of a number of our members that some dentists have been sending patients directly to a dental laboratory for service, especially for denture repairs.

We believe that this procedure lowers the professional standing of the dentist and it certainly places the technician in a difficult position. Your technician is anxious to please you and if you send the patient to him to leave or receive the de ture, what can he do but accept it?

Then that patient tells his friend take his work directly to the laborato and to tell them that Doctor Jones Doctor Brown sent them in because was going away and could not both with it.

Your lab man is "stuck" and it reall puts him in a bad spot because it is violation of the laws of Pennsylvani with a severe penalty attached, for him accept work from anyone except a pro erly licensed dentist.

This letter is sent out with two r quests:

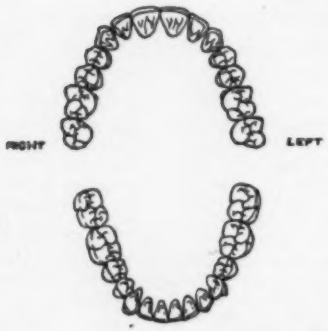
1. Do no depreciate the position your profession by making the patient fe that there is no necessity for him to s you in the beginning.

2. Do not put your technician in a po sition where he may be subject to fine imprisonment.

If you can't look after the case, se the patient to another dentist."

EASTERN CERAMIC LABORATOR

CERAMIC AND ACRYLICS



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